



TerraGraphics
Environmental Engineering, Inc.

www.terragraphics.com

Corporate Office:

121 S. Jackson St., Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

Other Office Locations:

Kellogg, Idaho

Boise, Idaho

Helena, Montana

Deer Lodge, Montana

Las Vegas, Nevada

Richland, Washington

MEMORANDUM

To: Kathy Lombardi, Maul Foster & Alongi, Portland
Alan Hughes, Maul Foster & Alongi, Vancouver

From: Tarita Harju, TerraGraphics, Kellogg
Cara Haley, TerraGraphics, Moscow
Dain Gillen, TerraGraphics, Kellogg

Date: September 18, 2014

Project Code: 14086-02

Subject: Substantive Compliance with the Clean Water Act, Section 404 — Lower
Burke Canyon Repository

1 Introduction

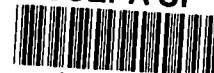
This memorandum is a record of the Successor Coeur d'Alene Custodial and Work Trust's (CDA Trust) evaluation and findings, pursuant to requirements of Section 404 of the Clean Water Act (CWA), regarding the planned construction activities at the Lower Burke Canyon Repository (LBCR) in the Canyon Creek watershed of the Coeur d'Alene Basin Bunker Hill Mining and Metallurgical Superfund Site (BHSS) in Shoshone County, Idaho. The LBCR will provide a location for consolidating mine waste materials, including mine waste rock and tailings that are generated from cleanup and remedial actions in the Upper Basin under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The CDA Trust, at the direction of the United States Environmental Protection Agency (USEPA), is planning to develop the LBCR using a phased approach. The initial development of the LBCR area (including supporting infrastructure) will be constructed in late 2014, with waste placement scheduled to commence in the spring of 2015. During initial construction activities, existing wetlands in the southeast corner of the LBCR site will be impacted by installation of a temporary stormwater pond. This document provides detailed information on the selected repository location, design, process by which it was chosen, impacts to wetlands, and proposed mitigation measures.

1.1 Scope

The scope of this compliance document encompasses a description of construction work and LBCR operations proposed for 2014-2019 in the following document: *Final Remedial Design* —

USEPA SF



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Basis of Design Report, Lower Burke Canyon Repository (CDM Smith, 2014). The proposed work includes initial LBCR construction of infrastructure and facilities, as well as placement of approximately 312,000 bank cubic yards (bcy) of waste in two phases. Phase 1 and Phase 2 waste consolidation activities are assumed to be conducted over a five-year period; however, the actual phased waste consolidation schedule is uncertain.

Though these proposed actions will occur in the future, wetland locations and potential impacts are described in this document. As long as these future construction activities take place within five years of the current wetland assessment and do not include placement of waste outside the proposed Phase 1 and Phase 2 footprint, it can be assumed that the wetland locations, descriptions, and potential impacts discussed herein will still be valid. Because new wetlands can form and existing wetlands can expand, any planned construction included in this document that is not initiated within five years (2019) will require a new wetland assessment.

A conceptual design for full build-out of the repository has been completed, which estimates a total full-development capacity for LBCR of 1,150,000 bcy of consolidated waste. Detailed design and phasing have not been determined beyond Phase 1 and Phase 2 for this full build-out configuration, so there is potential for other identified wetlands to be impacted (TerraGraphics, 2014). If applicable, another compliance document will be prepared at a later date to address future construction activities and possible wetland disturbances for full build-out of LBCR.

1.2 Purpose and Need

The purpose of the LBCR and its supporting infrastructure is to provide a location to consolidate mine waste materials generated from remedial actions in the Upper Basin of the BHSS. Waste materials accepted at the LBCR are anticipated to come from the Basin Remediation Program (BPRP), the Institutional Controls Program (ICP), paved roads remediation, and remedy protection projects.

This project was designed to meet the Remedial Action Objectives (RAOs) and requirements presented in the Upper Basin Record of Decision Amendment (RODA)(USEPA, 2012). The objective of the overall surface contamination remedial action within the BHSS is to reduce exposure to toxic metals from incidental ingestion and/or inhalation of surface tailings/waste rock and other mines wastes, and to control and/or reduce run-on and runoff from soil/tailings/mine dumps and repositories (CDM Smith, 2014). Specific RAOs from the RODA that waste consolidation at LBCR will support include, but are not limited to:

- Preventing discharges of seeps, springs, and leachate that would cause surface water to exceed drinking water and water quality standards.
- Restoring surface water designated as beneficial use for drinking water to meet drinking water and water quality standards.
- Reducing human exposure to soil, sediments, and source materials that have concentrations of Contaminants of Concern (COCs) greater than remediation goals.
- Reducing discharge to surface water of groundwater containing COCs at concentrations that cause surface water to exceed levels protective of ecological receptors.

This project is needed to reduce contaminant metals loading into Canyon Creek, a tributary to the South Fork Coeur d'Alene River (SFCDR), which subsequently flows into Lake Coeur d'Alene.

Several sites in the Canyon Creek watershed are identified in the RODA as eligible for remedial action; an estimated 1.8 million bcy of waste materials are estimated to exist within the watershed (TerraGraphics, 2011). After evaluating numerous potential repository sites (see Section 4.2.1), only two alternatives were selected as viable, sound options meeting the repository siting criteria. The LBCR will have the capacity to accept approximately 1.15 million bcy of waste from areas designated in the RODA, but will require mitigation work for wetland impacts. This analysis has been conducted to justify and minimize those losses. Approval of this CWA Section 404 evaluation and necessary mitigation plans by USEPA Region 10's Aquatic Resources Unit must be obtained prior to implementation of the LBCR project.

2 Project Area Description

The LBCR site is located in Shoshone County, Idaho, approximately 2.25 miles northeast of Wallace near the community of Woodland Park. The site covers an area of approximately 40 acres and lies north of Grays Bridge Road, bounded by Burke Road on the west and Canyon Creek on the east. Canyon Creek flows along the eastern boundary of the proposed repository, and then continues south to its confluence with the SFCDR, draining an area of approximately 22 square miles. The LBCR site comprises property owned by Hecla and the United States Bureau of Land Management. The historical and current land use includes mine waste management, and the site is not considered readily developable for commercial or residential use.

The proposed LBCR will be constructed over the now inactive Star Tailings Impoundment (STI), Pond 1 through Pond 4. The following excerpt from *2012 Lower Burke Canyon Repository Predesign Investigation Results* (MFA, 2012) provides a description of how these ponds were originally constructed:

“The STI received Star Mine tailings from the mid-1960s until the 1980s and is a known source of contamination to the Canyon Creek watershed (USEPA, 2001). The ponds were constructed on top of the existing ground surface, which was composed of topsoil, wood debris, mine waste, and stream alluvium that had been deposited by the creek through overbank flooding. Pond embankments (e.g., starter dams) were constructed in lifts as ponds filled to capacity. The embankment material consisted of borrow material scraped from the hillsides, waste rock, or material from the Canyon Creek basin floodplain. The ponds were capped once they were filled to capacity.”

The following excerpts regarding local geology and existing soils characterization are presented in the *Final Remedial Design – Basis of Design Report, Lower Burke Canyon Repository* (CDM Smith, 2014):

“Alluvium, associated with nearby Canyon Creek underlies the entire STI. The alluvium is generally very dense and consists of a slightly silty to silty gravel with sand, cobbles, and boulders. Material disposed of within the STI's perimeter dams consists of mill tailings, which include a combination of silty sands to sandy silts that were placed when wet and are normally to slightly under consolidated. In addition, Pond No. 2 has been capped by a 12 to 20-foot thick layer of sandy to silty gravel. Based on historic documentation, it appears that this material may be waste material that was consolidated in this area in the mid 1990's”.

“Analyses of soil samples collected at the STI indicate background metals concentrations within the embankment materials exceed cleanup levels. Lead concentrations within the embankment soil samples range from 920 to 3,920 milligrams per kilogram (mg/kg), exceeding the cleanup level of 530 mg/kg. Surface soil samples also exceeded the cleanup level with lead concentrations ranging from 2,710 to 8,540 mg/kg.”

The proposed LBCR site is located close to, but outside the Federal Emergency Management Agency (FEMA) 100-year floodplain (i.e., flood zone “AE”) and 100-year floodway (the stream channel and that portion of the adjacent floodplain that must remain open to permit the passage of the 100-year flood). The eastern toe of the existing STI embankment for Ponds 1 through 4 is adjacent to the FEMA 100-year floodway.

Refer to the *Final Remedial Design – Basis of Design Report, Lower Burke Canyon Repository* (CDM Smith, 2014) for a more detailed description of the existing LBCR site characteristics.

3 Description of the Action

Proposed work under this project scope of work includes initial LBCR construction and Phase 1 and Phase 2 waste consolidation, discussed below. Key elements and stormwater and erosion control Best Management Practices (BMPs) of the proposed project are described in the following sections.

In addition to identified BMPs, the construction contractor must prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) to the CDA Trust for approval prior to starting construction. BMPs will be inspected and maintained in accordance with the substantive requirements of the 2012 USEPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit, Idaho Department of Environmental Quality (IDEQ) requirements, and the contractor’s SWPPP. The contractor will document inspections, monitoring results, and any required maintenance. Results from the BMP monitoring will be used to determine if additional BMPs are needed to meet the Applicable or Relevant and Appropriate Requirements (ARARs) substantive requirements.

3.1 Initial LBCR Construction

Proposed work for initial LBCR development includes various infrastructure improvements and construction activities necessary to support future waste consolidation operations. A full description of the planned activities and designs are presented in CDM Smith (2014); information quoted directly from that report is summarized below.

Construction Elements:

- *Clearing and grubbing* – clear and grub approximately 5.4 acres on top of the existing STI and an additional 1 acre immediately west of Burke Road. Under this work, abandon and remove the existing Gem portal pilot treatment system located at the northern end of the existing STI, within the footprint of the LBCR.
- *Site access points (entrances/exits)* – install geotextile and place riprap to construct three stabilized construction entrances.

- *Access roads* – construct, modify, abandon, and/or realign 16-foot to 24-foot wide temporary haul gravel roads within the LBCR totaling approximately 1,180 linear feet of access road for Phase 1 waste placement.
- *Water supply and electrical utilities* – relocate or abandon existing adit water pipelines that run within/near the proposed LBCR site and install a non-potable water supply at LBCR for decontamination and dust control. Existing power transmission lines will be relocated and new services will be installed.
- *Stormwater and erosion control pond and channels* – install temporary stormwater pond by constructing berms from salvaged on-site fill material (2H:1V side slopes). Install riprap-lined spillway/overflow channel near the southeast corner of the pond. Clean-out and remove obstructions from 3,950 linear feet of existing ditch between Burke Road and the existing STI; re-grade as necessary to maintain a trapezoidal shape and provide positive drainage to the stormwater pond. Construct 3,495 linear feet of new temporary stormwater control channel on the east side of the existing STI (2-foot deep trapezoidal channel with 2H:1V side slopes).
- *Stormwater and erosion control BMPs* – install approximately 30 rock check dams (or straw bales) within stormwater channels to minimize erosion during operations. Construct and maintain approximately 5,700 linear feet of silt fence, or similar BMPs, around the perimeter of the LBCR footprint. Implement additional erosion control measures during the operation life cycle of the LBCR, such as perimeter diversion dikes, hydroseeding or spray-on type stabilizers, and covering with polyethylene sheeting.
- *Decontamination, ICP, and personnel facilities* – Perform subgrade grading and excavation for structures. Facility features include a concrete decontamination pad with an adjacent sump, water supply features, a 1,200 square foot concrete dump pad, an asphalt parking lot, gate with perimeter fencing, and a 200 square foot building.
- *Site stabilization* – re-grade the western embankment of the STI Pond 4 for stability (approximately 49,800 square feet and 2,600 bcy of cut) and cover with growth media (1,850 bcy of fill); Cover slope with fiber rolls (20-foot spacing) and erosion control blankets. In addition, seed, fertilize, and hydromulch the temporary stormwater pond berms (approximately 16,500 square feet). Perform winterization of Phase 1 and Phase 2 waste consolidation areas after each placement season (typically May through September).

3.2 Phases 1 and 2 Waste Consolidation

The following excerpts from the *Final Remedial Design – Basis of Design Report, Lower Burke Canyon Repository* (CDM Smith, 2014) summarize the waste consolidation work under Phase 1 and Phase 2:

“As previously discussed, Phase 1 waste consolidation is anticipated to begin during the 2015 construction season ... As the Phase 1 waste placement area nears completion, minor site improvements (i.e. clearing and grubbing) will be completed on STI Ponds 1 and 2, and 3, in order to receive an additional 237,000 bcy of mine waste (Phase 2 waste consolidation). Phase 1 and 2 waste consolidation activities provide a total of 312,000

bcy (i.e. 75,000 bcy + 237,000 bcy). It is also possible that mine waste materials from RD/RA activities within the Canyon Creek Basin will begin to be delivered during Phases 1 and/or 2. The Phase 1 and 2 waste consolidation activities are assumed to be conducted over a period of 5 years; however, the actual phased waste consolidation schedule is uncertain.”

“The material to be placed within the LBCR will predominantly consist of re-compacted mine waste materials from the legacy mine and mill sites within the Canyon Creek Basin. In general, waste materials will be placed in lifts (no thicker than two times the largest diameter rock) and be machine compacted (i.e., padded drum roller or grid roller).”

4 Clean Water Act, Section 404 Substantive Compliance

Compliance with the CWA, Section 404 is required for work below ordinary high water in Waters of the U.S. and wetlands.

4.1 Jurisdictional Determination

The project will involve excavation of wetlands, as determined during the wetland assessment and subsequent delineation in July and August 2014 (TerraGraphics, 2014; included in this document as Attachment A). All the documented streams and wetlands in the project vicinity are Waters of the United States; therefore they are subject to the substantive requirements of Section 404 of the CWA. Total jurisdictional wetland area that will be impacted by construction in 2014 is 0.161 acres.

4.2 Alternatives

Two levels of alternatives were considered with regard to impacting jurisdictional wetlands: 1) repository siting within the Upper Coeur d’Alene Basin, and 2) the design elements and placement within the LBCR site.

4.2.1 Repository Siting

The LBCR was selected as a waste repository through a siting process. Alternative locations throughout the basin were evaluated for repository potential and LBCR was among two that were selected for further review. The following excerpt from CDM Smith (2014) summarizes the siting process and the decisions eliminating other potential sites from consideration:

“The IDEQ-led repository siting process was initiated in 2007. The Citizens Criteria Repository Site Ranking Summary (CH2M Hill, 2010b) identifies eight (8) sites, including the Star Tailings Impoundment (STI) site, as meeting the initial siting criteria of not being actively used by its owners and having a capacity of at least 500,000 bcy. Additional criteria were developed through a public input process, as documented in the Site Ranking Summary. Based on the results of the site ranking, additional public input, and other factors important to the agencies, the IDEQ and EPA proposed the STI and Osburn Tailings Impoundments for further use as repository sites. The two locations were presented in an Open

House held in Wallace, Idaho on March 25, 2010. The public was encouraged to ask questions and provide written comment on the proposed repository locations. The comment period ran from March 25 to April 25, 2010. The results of the siting process described above, public review comments, and commitments are available on the Basin Environmental Improvement Project Commission (BEIPC) website: www.basincommission.com. Based upon the siting process results, IDEQ and EPA determined that design of the LBCR should proceed.”

4.2.2 Design Element Placement

The operation of LBCR and the existing site conditions, including high levels of COCs (USEPA, 2012), require that stormwater is managed to prevent a contaminant or sediment release into Canyon Creek. To meet this design requirement, a stormwater pond will act as a settling basin to allow particulates to settle before the water discharges. Options for stormwater pond placement are limited at LBCR because it needs a 124,000 cubic foot capacity (CDM Smith, 2014). With excavation to increase capacity, the south east corner of LBCR is the only location that can achieve the size requirements for the stormwater pond.

After jurisdictional wetlands were identified in the proposed construction area, design alternatives to avoid impacting them, including constructing a berm around the wetlands, were considered. However, due to physical constraints including the STI pond embankments, Gray’s Bridge Road, and Canyon Creek, the required capacity could not be met without intruding onto the Canyon Creek 100-year floodplain. In addition, larger berms around the pond (to avoid excavation) would not increase pond capacity because the maximum water level is based on the elevation of the ditches that drain to the pond. Therefore, the only way to achieve the required capacity of the pond is to excavate 0.161 acres of jurisdictional wetlands.

4.3 Agency Coordination

Planning for LBCR development has included the CDA Trust and USEPA coordinating with the US Army Corps of Engineers, and affected property owners. As the project proceeds through the phases, coordination with all stakeholders listed above is expected to continue. National Environmental Policy Act compliance has been addressed in the RODA (USEPA, 2012).

4.4 Mitigation

The jurisdictional wetland area that will be impacted by initial construction in 2014 is 0.161 acres, which exceeds the 0.10 acre threshold and therefore requires mitigation. Wetland locations are shown in Figure 1. Options for wetland mitigation include: 1) Constructing, expanding, or improving a wetland to emulate the wetland characteristics that are being mitigated for; or 2) Purchasing mitigation credits from a wetland bank. After reviewing project

FIGURE 1



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid



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FILE: Iden/CIA_Trail/Lower_Burke_Canyon_Repository/MXD/LBCR_SurveyedWetland_20140621.mxd
PRINT DATE: Sep 15, 2014
PROJECT NUMBER: 14086-02

REQUESTOR: T. Harju
PROJECT MANAGER: T. Harju
CARTOGRAPHER: J. Gilley

PROJECT NAME:
LOWER BURKE
CANYON REPOSITORY
WETLANDS

LOWER BURKE CANYON REPOSITORY
WETLAND ASSESSMENT

objectives and timeline, USEPA recommended that the CDA Trust purchase mitigation credits from the wetland bank in closest proximity to the construction site.

TerraGraphics is coordinating with Valencia Wetland Bank, located in northern Idaho, to fulfill wetland mitigation requirements. Shoshone County is within Valencia's secondary service area where the ratio of wetland credits needed is 1.5:1. The total number of credits needed is determined by acreage of wetland to be impacted and an analysis of its functions and values.

4.4.1 Functions and Values Assessment

The US Army Corps of Engineer (USACE) Coeur d'Alene Regulatory Office requires function and values assessments to be conducted using the *Montana Wetland Assessment Method* (Berglund, 1999). The overall function unit rating from this method is used to determine the number of mitigation credits needed.

Wetland and general site characteristics that are assessed in order to determine the overall functional unit rating include:

- Habitat for federally listed and proposed threatened plants or animals,
- Habitat for species rated S1, S2, or S3 by the Montana Natural Heritage Program (for Idaho we used species rated S1, S2, or S3, which correspond to similar Montana risk rankings),
- General wildlife habitat,
- General fish / aquatic habitat,
- Flood attenuation,
- Short-term and long-term surface water storage,
- Sediment / nutrient / toxicant retention and removal,
- Sediment / shoreline stabilization,
- Production export / food chain support,
- Groundwater discharge / recharge,
- Uniqueness, and
- Recreation / education potential.

Wetland characteristics within the 2014 construction footprint warranted a rating of 'Low' for all categories listed above, except for general fish / aquatic habitat which received a 'Medium' rating. Based on these wetland characteristics, a total of 0.3542 functional units require mitigation (Attachment B). After the service area ratio is applied (1.5:1), the total credits that need to be purchased from Valencia Wetland Bank are 0.5313.

5 Substantive Compliance with Additional ARARs

5.1 Endangered Species Act

A Biological Assessment (BA) letter has been prepared in tandem with this Clean Water Act substantive compliance document to substantively comply with Section 7 (a)(2) of the Endangered Species Act of 1973 (ESA) (TerraGraphics, 2014). Threatened or endangered

species that may occur in Shoshone County include Canada Lynx, Bull Trout, Water Howellia, and Spaulding's Catchfly. All of these species are currently listed as threatened. The United States Fish and Wildlife Service (USFWS) IPaC (Information, Planning, and Conservation) System indicates that of the species listed above, none are known to occur in the project area (TerraGraphics, 2014). Although bull trout were not listed in the IPaC report as potentially occurring in the project area, the USFWS indicated that effects from construction should be evaluated to determine potential impact on the designated critical habitat, which is located more than 30 river miles downstream. The BA letter discusses Best Management Practices that will be followed during construction that will minimize potential impacts on bull trout habitat. The BA letter concludes that the proposed LBCR project may affect, but is not likely to adversely affect, bull trout (TerraGraphics, 2014).

5.2 Clean Water Act, Section 401

Because this project will be constructed under CERLA authority, a CWA 401 Certification is not required, but the cleanup action must comply with the substantive requirements. Adhering to temporary and permanent BMPs outlined in CDM Smith (2014) and Construction specification 01355 included in the bid documents will ensure activities are in compliance with the CWA, Section 401.

6 References

- Berglund. 1999. MDT- Montana Wetland Assessment Method. Prepared for Montana Department of Transportation, Environmental Services. May 25, 1999.
- CDM Smith. 2014. Final Remedial Design- Basis of Design Report, Lower Burke Canyon Repository, Bunker Hill Mining and Metallurgical Complex Superfund Site, Operable Unit 3. August 2014.
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- TerraGraphics. 2011. Upper Basin Repository Sampling and Analysis Plan/Quality Assurance Project Plan for Osburn and Star Tailings Impoundments, Shoshone County, Idaho. Prepared for Idaho Department of Environmental Quality. January, 2011.
- U.S. Environmental Protection Agency (USEPA). 2012. Interim Record of Decision (ROD) Amendment, Upper Basin of the Coeur d'Alene River, Bunker Hill Mining and Metallurgical Complex Superfund Site. August 2012.
- USEPA. 2001. Final (Revision 2) Remedial Investigation Report for the Coeur d'Alene Basin Remedial Investigation/Feasibility Study. Prepared by URS Greiner/CH2M Hill.

Attachment A-
Lower Burke Canyon Repository Expansion – Wetland Assessment: Field Findings



www.terragraphics.com

Corporate Office:

121 S. Jackson St., Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

Other Office Locations:

Kellogg, Idaho

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MEMORANDUM

To: Kathy Lombardi, Maul Foster & Alongi, Portland

From: Tarita Harju, TerraGraphics, Kellogg
Dain Gillen, TerraGraphics, Kellogg

Date: August 21, 2014

Project Code: 14064-01

Subject: **Lower Burke Canyon Repository Expansion – Wetland Assessment: Field Findings**

1 Introduction

This memorandum describes field activities and subsequent findings that were conducted in substantive compliance with the Clean Water Act (CWA) Dredging and Filling, Section 404, for the proposed 2014 construction at Lower Burke Canyon Repository (LBCR). Construction activities consist of excavating and constructing a drainage ditch and settling pond at the toe of the eastern slope of LBCR.

1.1 Scope and Purpose

The LBCR site was formerly operated as the Hecla-Star tailings impoundment and is not currently accepting contaminated waste. To accommodate waste disposal generated from remedial actions in the Canyon Creek drainage that are identified in the *2012 Upper Basin Record of Decision Amendment (RODA)* (USEPA 2012), the LBCR will be constructed over the footprint of the Hecla-Star tailings impoundment. Construction and expansion at LBCR is planned to occur in two or more stages over more than five years.

The scope of this wetland assessment and delineation was to identify potential wetlands in the entire proposed area of impact for all stages of LBCR development. After initial identification of potential wetlands, the scope was narrowed to delineate only the wetlands that lie within (or overlap with) the proposed 2014 construction footprint.

1.2 Project Area Description

LBCR is located in Shoshone County, Idaho approximately 1.5 miles northeast of Wallace near the community of Woodland Park. It lies north of Grays Bridge Road and is bound by Burke Road on the west and Canyon Creek on the east. The area assessed for the presence of wetlands includes the embankment surrounding the repository and the area in between the eastern edge of the repository and Canyon Creek (Figure 1). The topography of the area can be described as a narrow valley-bottom with adjacent steep, mountainous slopes. Localized topography consists of a series of depressions in between rock barbs placed perpendicular to the channel as part of a historical stream restoration project. The soils are non-native and considered highly disturbed.

2 Clean Water Act – Dredging and Filling, Section 404

Section 404 of the CWA regulates the discharge and dredging of material in waters of the U.S., including wetlands and streams. To comply with this law, a wetland assessment is required to determine the existence of wetlands and whether mitigation is required if they are disturbed.

Prior to a field assessment, aerial photographs and online tools were used to determine the likelihood of the existence of wetlands at the site. A review of the National Wetland Inventory database revealed that a riverine wetland classified as R3USC was present in the vicinity of the area of interest (USFWS, 2014).

TerraGraphics personnel assessed the project area for signs of jurisdictional wetlands in accordance with the U.S. Army Corps of Engineers 1987 and 2010 delineation manuals (USACE 1987, 2010). Three conditions must be met for an area to be considered a wetland: (1) it must have a dominance of hydrophytic vegetation, (2) it must have evidence of wetland hydrology, and (3) it must have hydric soils. The assessment was conducted in a year with average precipitation, thus water conditions were normal. Because the soil at the project area has been heavily disturbed by past mining activities, a heavier emphasis was placed on vegetation and hydrology than on soils for this assessment.

2.1 Wetland Locations

To assess the planned areas of impact, TerraGraphics conducted two separate field investigations in 2014. On July 9th, 38 potential wetland areas were identified and their extents nearest the toe of the LBCR slope were marked spatially with a map-grade global positioning system (GPS). After discussing the numerous potential wetland locations with Maul Foster & Alongi (MFA), the immediate area of interest was further defined to include only areas impacted by construction planned for 2014. The wetland delineation for areas within the 2014 construction footprint was conducted on August 12th and 19th and included two of the original 38 potential wetland areas. For each of the two potential wetland areas, two plots were investigated (four plots in all) —one within the wetland boundary and one just beyond the edge of the wetland in upland habitat. Locations of each plot are shown on Figure 1 and photos are shown on Figure 2, Figure 3 and Figure 4.

Data collected from plots 1 and 2 were used to delineate wetland in the area referred to as Wetland 1; plot locations are shown on Figure 1. There are three wetland sub-areas adjacent to

each other that are hydrologically connected and have similar vegetation and soil characteristics. The 0.024-acre wetland area consists of low elevation wetland with upland mounding. The total size for Wetland 1 areas that are described using data at plot 1 is 0.144 acres (including the mounded areas) and is entirely within the proposed 2014 construction footprint.

Data collected from plots 3 and 4 were used to delineate wetland in two wetland sub-areas adjacent to each other that are hydrologically connected (referred to as Wetland 2; plot locations are shown on Figure 1). The total size for Wetland 2 areas that are described using data at plot 3 is 0.025 acres; however approximately 0.008 acres of the wetland is beyond the proposed 2014 construction footprint.

Total wetland area from both Wetland 1 and Wetland 2 areas that are within the 2014 construction footprint is 0.161 acres (including mounded areas).

2.2 Hydrophytic Vegetation

Wetland Indicator Status represents how likely a plant species is to occur in a wetland. A status of OBL indicates the plant occurs in wetlands greater than 99% of the time, FACW indicates that the species occurs in wetlands between 66% and 99% of the time, FAC indicates that the species occurs in a wetland between 34% and 66% of the time, FACU indicates that the species occurs in a wetland between 1% and 34% of the time, and UPL indicates that the species occurs in a wetland less than 1% of the time. A dominance of hydrophytic vegetation was observed at both wetland plots (plots 1 and 3) using either the Rapid Test for Hydrophytic Vegetation or the Dominance Test (USACE 2010). Dominant vegetation, as defined in the regional wetland delineation manual (USACE 2010), is presented in Table 1 for each plot.

Table 1. Dominant plants observed at each plot.

Plot	Stratum	Common Name	Scientific Name	Percent Cover	Wetland Indicator Status	Wetland Vegetation Present? (Yes/No)
1	Tree	None				YES
	Sapling/Shrub	None				
	Herb/Forb	slender wheatgrass	<i>Elymus trachycaulus</i>	95%	FAC	
		timothy-grass	<i>Phleum pratense</i>	5%	FAC	
2	Tree	None				NO
	Sapling	None				
	Herb/Forb	redtop	<i>Agrostis gigantea</i>	95%	FAC	
		moss (dry)	unknown	3%	unknown	
3	Tree	None				YES
	Sapling/Shrub	None				
	Herb/Forb	spike rush	<i>Eleocharis palustris</i>	5%	OBL	
		unknown	<i>Scirpus spp.</i>	2%	OBL/FACW	
4	Tree	None				NO
	Sapling/Shrub	white pine	<i>Pinus monticola</i>	3%	FACU	
	Herb/Forb	redtop	<i>Agrostis gigantea</i>	85%	FAC	

The transition from vegetation found in the wetland areas to the dominant upland species was rapid and closely followed the elevation gradient at wetland boundaries.

2.3 Hydrology

Data were collected on August 12th and August 19th to determine if each area exhibits wetland hydrology.

Plot 1 met wetland hydrologic criteria because an algal crust (indicator B4) and surface soil cracks (indicator B6) were observed. In addition, the wetland area around Plot 1 was inundated with one to six inches of water during the July 9th assessment.

Plot 3 met wetland criteria because the following indicators were observed: soil saturation in the top 12 inches (indicator A3), algal crust (indicator B4), iron deposits (indicator B5), surface soil cracks (indicator B6), presence of reduced iron (indicator C4), and the plot was a sparsely

vegetated concave surface (indicator B8). The wetland area around Plot 3 was inundated with one to eight inches of water during the July 9th assessment.

None of the wetland hydrologic criteria were met at plot 2 or plot 4.

2.4 Hydric Soil

The hydric soil indicators used in the regional supplement (USACE 2010) are designed to identify soils that have anaerobic conditions in the upper strata due to saturation, ponding or flooding during the growing season. USDA soil maps indicated two soil types in the area of investigation; slickens (Map Unit 85) and a udarents-aquic udifluvents-slickens complex (Map Unit 90), neither of which are classified as hydric (USDA, 2014). Soils in Silver Valley floodplains are highly impacted by mining activities. They tend to be rocky and often contain mine waste and tailings. These rocky tailings do not exhibit classic hydric indicators even when they are kept in anaerobic conditions. Although the LBCR assessment area includes restored areas, soils are still disturbed similarly to the rest of the impacted areas in the Silver Valley. A test pit was dug for each sample plot and soils were observed for hydric indicators.

Test Pit 1 soils consisted of a sand-gravel mix with cobbles and color properties of 10YR/4/3 (Munsell, 2000). Test Pit 1 did not exhibit hydric soil indicators. However, because the soils at this plot are highly impacted by mining activities, they are considered problematic and special considerations were made during wetland delineation because other wetland criteria were met (USACE 1987).

Test Pit 2 soils consisted of a silt-gravel mix with color properties of 10YR/4/3 (Munsell, 2000). No hydric soil characteristics were observed.

Test Pit 3 soils consisted of a clay organic mix from zero to three inches deep with color properties of 10YR/4/2 (Munsell, 2000). The soil from 3-13 inches deep consisted of a sand-gravel mix with color properties of 10YR/5/2. Hydric soil indicators present at this test pit include a depleted matrix (indicator F3) and redox depressions (indicator F8).

Test Pit 4 soils consisted of a sand-gravel mix with color properties of 10YR/4/4 (Munsell, 2000). No hydric soil characteristics were observed.

2.5 Summary

A wetland assessment and subsequent wetland delineation have been completed in substantive compliance with the CWA Section 404 as it applies to the proposed 2014 construction at LBCR. During the initial assessment, 38 potential wetland sites were identified, two of which fell within the proposed 2014 area of impact. A wetland delineation was conducted on each of these two areas in accordance with the USACE wetland delineation manuals (USACE 1987, 2010). For each wetland area, data were collected at paired plots near the wetland border to represent both wetland and upland characteristics. The areal extent of both wetland sites were surveyed by a professionally licensed surveyor and spatial data were provided to MFA. The total acreage of jurisdictional wetland that lies within the 2014 construction footprint is 0.161 acres.

The original wetland assessment conducted in July, 2014 may be used to determine areas that require formal wetland delineation if they are likely to be impacted by future construction at LBCR.

3 Next Steps

The wetland areas described above are in the 2014 project footprint at LBCR. In compliance with the CWA Section 404, this memorandum documents those wetlands. The total wetland acreage that is expected to be disturbed by construction in 2014 exceeds 0.10 acres and will require mitigation. To determine appropriate mitigation requirements, a functions and values assessment will need to be performed in accordance with the *Montana Wetland Assessment Method* (Berglund 1999) and a CWA Section 404 document will need to be prepared. Further compliance action related to these wetlands is dependent upon U.S. Environmental Protection Agency (USEPA) decisions regarding substantive compliance.

4 References

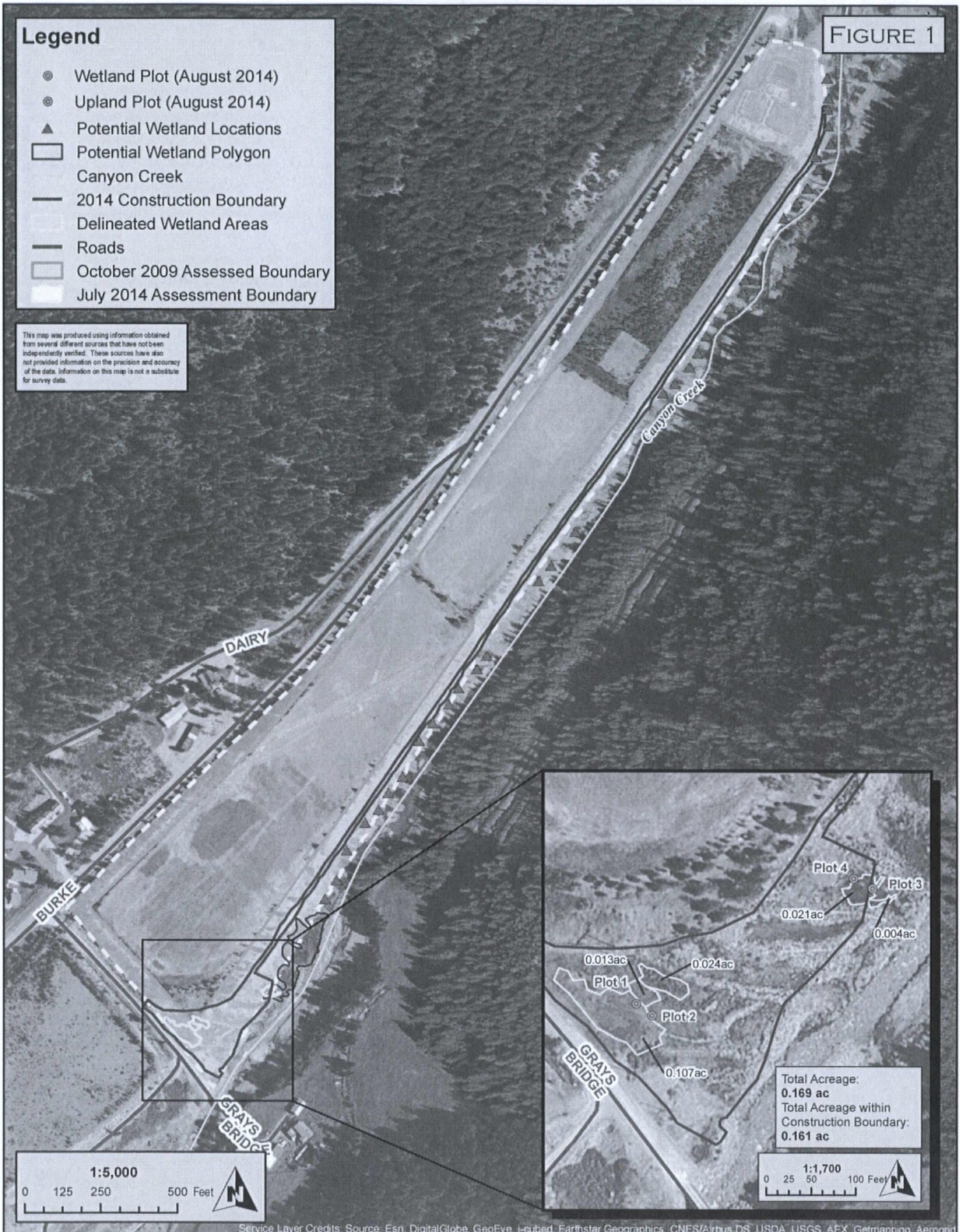
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FIGURE 1

Legend

- Wetland Plot (August 2014)
- Upland Plot (August 2014)
- ▲ Potential Wetland Locations
- Potential Wetland Polygon
- Canyon Creek
- 2014 Construction Boundary
- Delineated Wetland Areas
- Roads
- October 2009 Assessed Boundary
- July 2014 Assessment Boundary

This map was produced using information obtained from several different sources that have not been independently verified. These sources have also not provided information on the precision and accuracy of the data. Information on this map is not a substitute for survey data.



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FILE: 15010GA_TrailLower_Burke_Canyon_Repository\MRCS
LBOR_SurveyedWetland_20140801.mxd
PRINT DATE: Aug 21, 2014
PROJECT NUMBER: 14064-01

REQUESTOR: T. Harju
PROJECT MANAGER: T. Harju
CARTOGRAPHER: J. Gilley

PROJECT NAME:
LOWER BURKE
CANYON REPOSITORY
WETLANDS

LOWER BURKE CANYON REPOSITORY
WETLAND ASSESSMENT
DELINEATED WETLAND AREAS



Figure 2. Wetland Area 1



Figure 3. Wetland Area 2



Figure 4. Representative Upland Area (near Plot 2)

Lower Burke Canyon Repository—Clean Water Act, Section 404 Substantive Compliance

Attachment B-
1999 MDT Montana Wetland Assessment Form- Functions and Values Assessment

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Lower Burke Canyon Repository Development 2. Project #: Control #:

3. Evaluation Date: Mo. 08 Day 12 Yr. 2014 4. Evaluator(s): T. Harju, D. Gillen 5. Wetlands/Site #(s) Site #: 1, 3

6. Wetland Location(s): i. Legal: T N or S; R E or W; S ; T N or S; R E or W; S ;
ii. Approx. Stationing or Mileposts:

iii. Watershed: GPS Reference No. (if applies):
Other Location Information:

7. a. Evaluating Agency: USEPA 8. Wetland size: (total acres) (visually estimated)
b. Purpose of Evaluation: 0.161 ac (measured, e.g. by GPS (if applies))
1. Wetlands potentially affected by MDT project
2. Mitigation wetlands, pre-construction
3. Mitigation wetlands, post-construction
4. Other
9. Assessment area: (AA, tot., ac., (visually estimated)
see instructions on determining AA) 0.161 ac (measured, e.g. by GPS (if applies))

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
Riverine	Riverine (R)	Upper Perennial (3)	EM	(C), seasonally flooded	—	100%

(Abbreviations: System: Palustrine (P); Subsystem: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO); System: Lacustrine (L); Subsystem: Limnetic (2); Classes: RB, UB, AB; Subsystem: Littoral (4); Classes: RB, UB, AB, US, EM/ System: Riverine (R); Subsystem: Lower Perennial (2); Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3); Classes: RB, UB, AB, US; Water Regimes: Permanently Flooded (H), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J); Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A); HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare Common Abundant
Comments:

12. General condition of AA:

i. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

Conditions within AA	Predominant conditions adjacent to (within 500 feet of) AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged, or has been subject to minor clearing, contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing; or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly natural state, is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but moderately grazed or hayed or selectively logged, or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc.): Mining Disturbance

ii. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list)

iii. Provide brief descriptive summary of AA and surrounding land use/habitat:

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 above)

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	High	Moderate	Low

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

I. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	_____
Incidental habitat (list species)	D	S	_____
No usable habitat	D	<input checked="" type="radio"/> S	Nearest designated critical bull trout habitat is >20 miles downstream

II. Rating (use the conclusions from I above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	9 (H)	.8 (M)	.7 (M)	5 (L)	.3 (L)	<input checked="" type="radio"/> 0 (L)

Sources for documented use (e.g. observations, records, etc.):

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in 14A above)

I. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D	S	_____
Secondary habitat (list species)	D	S	_____
Incidental habitat (list species)	D	<input checked="" type="radio"/> S	Possible, but low probability for <i>Myotis californicus</i> (S1 Idaho ranking) and <i>Elgaria coerulea</i> (S2 Idaho ranking) incidental habitat
No usable habitat	D	S	_____

II. Rating (use the conclusions from I above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	8 (H)	.7 (M)	.6 (M)	.2 (L)	<input checked="" type="radio"/> 1 (L)	0 (L)

Sources for documented use (e.g. observations, records, etc.):

14C. General Wildlife Habitat Rating:

I. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- observations of abundant wildlife #s or high species diversity (during any period)
- abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- presence of extremely limiting habitat features not available in the surrounding area
- interviews with local biologists with knowledge of the AA

Low (based on any of the following [check]):

- few or no wildlife observations during peak use periods
- ☒ little to no wildlife sign
- ☒ sparse adjacent upland food sources
- interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- observations of scattered wildlife groups or individuals or relatively few species during peak periods
- common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- adequate adjacent upland food sources
- interviews with local biologists with knowledge of the AA

ii. Wildlife habitat features (working from top to bottom, circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms].)

Structural diversity (see #13)	High								Moderate								<input checked="" type="radio"/> Low			
	Even				Uneven				Even				Uneven				Even			
Class cover distribution (all vegetated classes)	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	<input checked="" type="radio"/> S/I	T/E	A
Duration of surface water in ≥ 10% of AA																				
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	<input checked="" type="radio"/> L	L	L

iii. Rating (use the conclusions from I and II above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Evidence of wildlife use (i)	Wildlife habitat features rating (ii)			
	Exceptional	High	Moderate	<input checked="" type="radio"/> Low
Substantial	1 (E)	.9 (H)	.8 (H)	.7 (M)
Moderate	.9 (H)	.7 (M)	.5 (M)	.3 (L)
Minimal	.6 (M)	.4 (M)	.2 (L)	<input checked="" type="radio"/> .1 (L)

Comments:

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. **Habitat Quality** (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating)

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading - 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. **Modified Habitat Quality** (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support? **Y** N Modified habitat quality rating = (circle) E H M **L**

iii. **Rating** (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	Modified Habitat Quality (ii)			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	9 (H)	7 (M)	5 (M)
Introduced game fish	9 (H)	8 (H)	6 (M)	4 (M)
Non-game fish	7 (M)	6 (M)	5 (M)	3 (L)
No fish	5 (M)	3 (L)	2 (L)	1 (L)

Comments: Cutthroat trout documented in Canyon Creek

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

i. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10, >2 acres			<2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	9(H)	6(M)	8(H)	7(H)	5(M)	4(M)	3(L)	2(L)
AA contains unrestricted outlet	9(H)	8(H)	5(M)	7(H)	6(M)	4(M)	3(L)	2(L)	1(L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle) **Y** N
Comments: Residences downstream have history of being affected by flooding

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, circle NA here and proceed with the evaluation.)

i. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			<5, >1 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1(H)	9(H)	8(H)	8(H)	6(M)	5(M)	4(M)	3(L)	2(L)
Wetlands in AA flood or pond < 5 out of 10 years	9(H)	8(H)	7(M)	7(M)	5(M)	4(M)	3(L)	2(L)	1(L)

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

i. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	8 (H)	7 (M)	5 (M)	5 (M)	4 (M)	3 (L)	2 (L)
AA contains unrestricted outlet	9 (H)	7 (M)	6 (M)	4 (M)	4 (M)	3 (L)	2 (L)	1 (L)

Comments:

14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle **NA** here and proceed to next function)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep binding rootmasses	Duration of surface water adjacent to rooted vegetation		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
≥ 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments:

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or absent (see instructions for further definitions of these terms.)

A	Vegetated component > 5 acres						Vegetated component 1-5 acres						Vegetated component < 1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

i. Discharge Indicators

- ☐ Springs are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☐ Other

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Other

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MNHP			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MNHP			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. site: (circle) Y **(N)** (if yes, rate as [circle] High [1] and go to ii; if no go to iii)

ii. Check categories that apply to the AA: ☐ Educational/scientific study; ☐ Consumptive rec.; ☐ Non-consumptive rec.; ☐ Other

iii. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y **(N)**

(If yes, go to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iv. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	Disturbance at AA (#12i)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	
B. MT Natural Heritage Program Species Habitat	L	0.1	1	
C. General Wildlife Habitat	L	0.1	1	
D. General Fish/Aquatic Habitat	M	0.5	1	
E. Flood Attenuation	L	0.2	1	
F. Short and Long Term Surface Water Storage	L	0.3	1	
G. Sediment/Nutrient/Toxicant Removal	L	0.3	1	
H. Sediment/Shoreline Stabilization	N/A			
I. Production Export/Food Chain Support	L	0.3	1	
J. Groundwater Discharge/Recharge	L	0.1	1	
K. Uniqueness	L	0.2	1	
L. Recreation/Education Potential	L	0.1	1	
Totals:		2.2	11	2.2*0.161 = 0.3542

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below)

I II III **IV**

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or
- ☐ Score of 1 functional point for Uniqueness; or
- ☐ Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)

- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or
- ☐ "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or
- ☐ Score of .9 functional point for Uniqueness; or
- ☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

Category III Wetland: (Criteria for Categories I, II or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)

- ☐ "Low" rating for Uniqueness; and
- ☐ "Low" rating for Production Export/Food Chain Support; and
- ☒ Total actual functional points < 30% (round to nearest whole #) of total possible functional points (2/11 = 0.18)